



PRT-GX-SRVR

Protege GX System Networking

Administrator Guide



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The Protege GX System

Introduction

The Protege GX system is a powerful integrated alarm and access control management system designed to provide integration with building automation, apartment complex control and HVAC in one flexible package.

Communication is over a proprietary high speed protocol across an encrypted local area network and AES encrypted proprietary RS-485 module network. Using modular-based hardware design, system installers have the flexibility to accommodate any installation, small or large, residential or commercial.

Document Information

This document outlines the operation of the various networking and communication protocols used by the Protege GX system.

It is recommended that at a minimum the ports specified in this document are opened for devices to allow upgrade and effective management of the access control system.

Software Version

This document is independent of the software version that is operating and is based on the default configuration of the system.

Third Party Software Applications

The Wireshark utility is an excellent diagnostic tool when identifying connectivity issues.

- Wireshark download link: <http://www.wireshark.org/download.html>

Protege GX Server Operation

The Protege GX system is composed of three services when in the standard configuration. Each service is designed to perform a number of related tasks as detailed below.

Protege GX Data Service

The Protege GX Data Service receives requests from the client user interface. The service maintains a connection to SQL Server for programming and editing records and alerts the user interface when new events or alarms are available.

The service also manages control requests or manual operator commands that result in an outbound connection to the controllers from the attached client interfaces.

Protege GX Event Service

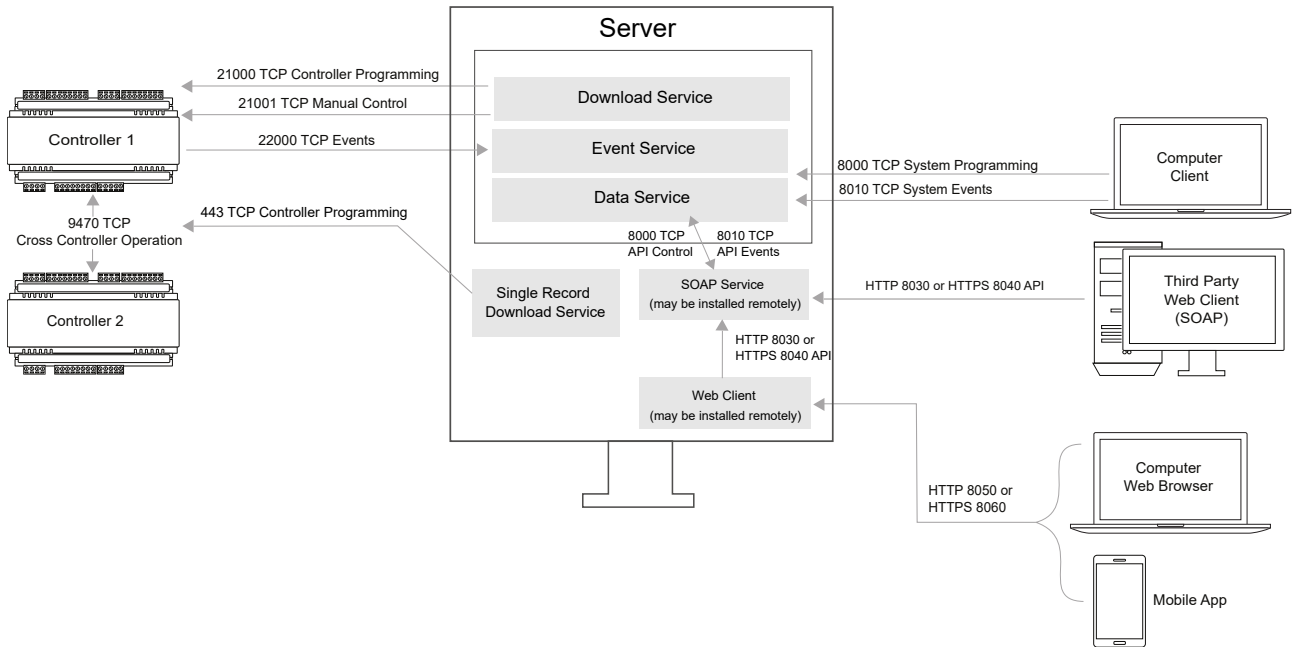
The Protege GX Event Service uses inbound connections to receive events sent by controllers. These events are saved to the database. Status updates and messages are also sent to the event service.

Protege GX Download Service

The Protege GX Download Service transfers programming changes to controllers. It sequentially checks each controller to determine whether programming changes are required, and if so downloads the updated configuration to the controller.

System Architecture

The following diagram is indicative of the general structure of a Protege GX system when connected to an IP network. This is a basic overview of the setup and is not intended to include all connections. You should use this as a reference when opening ports and configuring routers to allow communications to operate correctly.



IP Networking Ports

The following ports may need to be forwarded or approved in your firewall.

| From | Outbound Port | To | Inbound Port | Protocol | Description |
|--------------------------------|---------------|----------------------------|--------------|--------------|--|
| Download Service | Any | Controller | 21000 | TCP | Controller programming. |
| Download Service | Any | Controller | 21001 | TCP | Manual control commands. |
| Controller | Any | Event Service | 22000 | TCP | Store system events and status updates in SQL database. |
| Client | Any | Data Service | 8000 | TCP | Store system programming in SQL database. |
| Client | Any | Data Service | 8010 | TCP | Display system events. |
| SOAP Service | Any | Data Service | 8000 | TCP | Store system programming in SQL database. |
| SOAP Service | Any | Data Service | 8010 | TCP | Display system events. |
| Single Record Download Service | Any | Controller | 443 | TCP | Controller programming. |
| Modules | 9450 | Controller | 9450 | UDP | Module communication. Programming, control and status. |
| Modules | 9460 | Controller | 9460 | UDP | Touchscreen communication. |
| Controller | 9450 | Modules | 9450 | UDP | Module communication. Programming, control and status. |
| Controller | 9460 | Modules | 9460 | UDP | Touchscreen communication. |
| Entry Station | Any | Controller | 9450 | TCP | Programming, control and status. |
| Controller | 9470 | Controller | 9470 | TCP | Cross controller operation. |
| Controller | Custom | Central Monitoring Station | Custom | TCP | Offsite IP Monitoring (equivalent to ContactID alarm monitoring). Ports should be agreed between the installation company and monitoring company. |
| Web Client | Any | SOAP Service | 8030 | HTTP TCP | API for controlling and programming Protege GX systems. |
| Third Party Web Client (SOAP) | Any | SOAP Service | 8030 | HTTP SOAP | API for controlling and programming Protege GX systems. |
| Web Client | Any | SOAP Service | 8040 | HTTPS TCP | API for controlling and programming Protege GX systems. |

| From | Outbound Port | To | Inbound Port | Protocol | Description |
|--------------------------------|---------------|--------------|--------------|---------------|--|
| Third Party Web Client (SOAP) | Any | SOAP Service | 8040 | HTTPS SOAP | API for controlling and programming Protege GX systems. |
| Web Browser | Any | Web Client | 8050 | HTTP TCP | Web based interface for controlling Protege GX systems. |
| Mobile App | Any | Web Client | 8050 | HTTP TCP | Web based interface for controlling Protege GX systems. |
| Web Browser | Any | Web Client | 8060 | HTTPS TCP | Web based interface for controlling Protege GX systems. |
| Mobile App | Any | Web Client | 8060 | HTTPS TCP | Web based interface for controlling Protege GX systems. |
| Data Service | Any | SQL Server | 1433* | TCP | Store programming in SQL database. Transfer programming to controllers. |
| Event Service | Any | SQL Server | 1433* | TCP | Store system events and status update in SQL database. |
| Download Service | Any | SQL Server | 1433* | TCP | Store programming in SQL database. Transfer programming to controllers. |
| Single Record Download Service | Any | SQL Server | 1433* | TCP | Store programming in SQL database. Transfer programming to controllers. |

*The SQL Server connection port is configurable. 1433 is the default. The following .NET Framework Data Provider for SQL Server connection string can be used for connections to SQL Server 2019, 2017, 2016, 2014, 2012 and 2008. See the [Connection Strings](#) website for more information.

```
Server=myServerName,myPortNumber; Database=myDataBase;
```

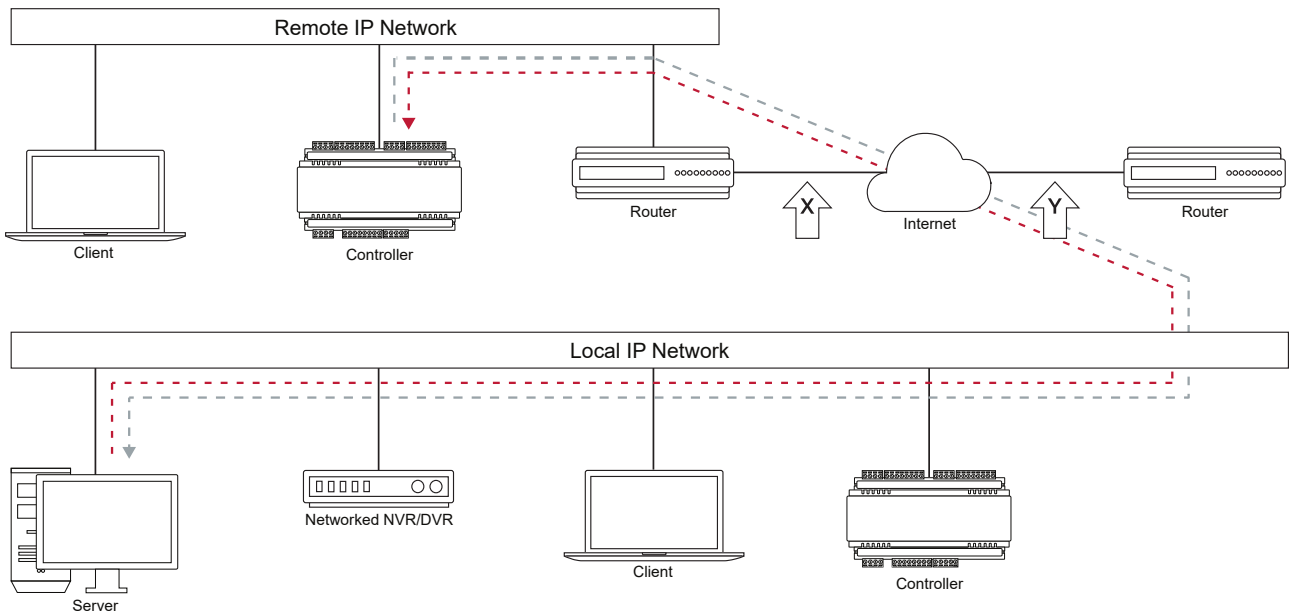
Some of the above ports can be changed if required. Contact ICT for further information on port customization.

Additional ports may be required for integration to third party systems, such as HLI integrations with elevator systems, and DVR integrations. Refer to the relevant documentation for specific integration requirements.

IP Networking Ports (Legacy Products)

| From | Outbound Port | To | Inbound Port | Protocol | Description |
|------------------|---------------|----------------|--------------|----------|---|
| Download Service | Any | PCB Controller | 9000 | TELNET | Control and service menu for firmware updates. |
| Telnet Client | Any | PCB Controller | 9000 | TELNET | Control and service menu for firmware updates. |
| Download Service | Any | PCB Controller | 69 | TFTP | Firmware update (transfer). |
| TFTP Client | Any | PCB Controller | 69 | TFTP | Firmware update (transfer). |
| TFTP Client | Any | PCB Controller | 10001 | TFTP | Hardware subsystem configuration and maintenance. |

Remote Controller Download Communications

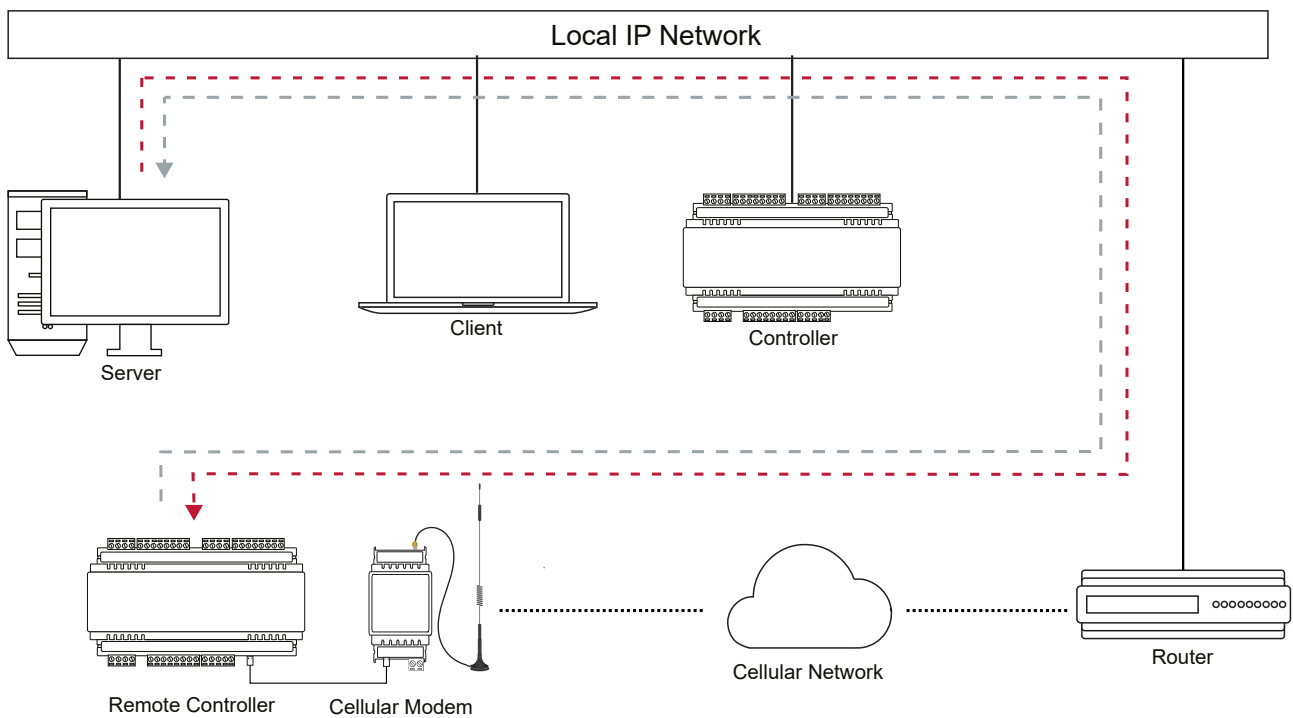


Protege GX Remote Controller Download Communications

During a download, a communication connection is initiated at the server and sent to the controller.

When the controller is on a remote IP network, the key to getting the controller online and communicating is to set up the correct port translation at points X and Y (see image above). The download service requires port forwarding configuration at point X. The event service requires port forwarding to be configured at point Y.

Cellular Network Connection



Protege GX controllers can also use the Protege DIN Rail Cellular Modem to communicate with the server via the 4G cellular network. This allows you to connect controllers to the Protege GX system even when they are located outside of wired networks .

The SIM card network provider for the cellular modem must allow both inbound and outbound connections, and you must enable dynamic IP address updates for this controller if the cellular modem does not have a fixed IP address. For more information and configuration instructions, see the [Protege DIN Rail Cellular Modem Configuration Guide](#), available from the ICT website.

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